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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/584,003

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FE 6156 (US)

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EXAMINER

LEE, RIP A

ART UNIT

PAPER NUMBER

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/584,003	<b>Applicant(s)</b> NIFANT'EV ET AL.	
	<b>Examiner</b> RIP A. LEE	<b>Art Unit</b> 1796	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 17-42 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17-23 and 28-42 is/are rejected.
- 7) ☒ Claim(s) 17, 19, 20, 22, 24-28 and 33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10-31-2006</u> .  | 6) <input type="checkbox"/> Other: ____.                          |

## **DETAILED ACTION**

### ***Priority***

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed with the European Patent Office on December 22, 2003. It is noted, however, that Applicant has not filed a certified copy of the foreign application as required by 35 U.S.C. 119(b). It appears that two copies of the same provisional document 60/532,331 have been filed on June 22, 2006. Please check the record.

### ***Claim Objections***

2. Claims 17, 20, 22, 24, and 28 are objected to because of the following informalities: The apostrophe in the terms "OR'O" and "R' is a divalent" is near illegible. For printing purposes, please replace the apostrophe with prime notation, *i.e.*, OR'O, or increase the font size of the existing apostrophe. Appropriate corrections are required.

3. Claims 17, 20, 22, 24, and 28 are objected to because of the following informalities: The definitions of divalent radical R' and divalent bridging group L are imprecise. The terms "alkylidene," "arylidene," "alkylarylidene," "arylalkylidene," "cycloalkylidene," and "silylidene," should be replaced with "alkylene," "arylene," "alkylarylene," "arylalkylene," "cycloalkylene," and "silylene," respectively. Appropriate corrections are required.

4. Claim 19 is objected to because of the following informalities: The term "saturated or unsaturated" (three occurrences) may be deleted since alkyl groups are necessarily saturated. Appropriate corrections are required.

5. Claim 28 is objected to because of the following informalities: Please replace "alkaline or alkali-earth" with "alkali or alkaline earth" (two occurrences at bottom of page 11). Appropriate corrections are required.

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6. Claim 33 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The limitations recited in claim 33 relate to metallocene complexes rather than free ligands.

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 35-42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Independent claims 35 and 36 are rendered vague and indefinite because formula (I), (IIa), (IIIa), and (IVa) do not appear in the claim. Dependent claims 37-42 are subsumed under the rejection.

***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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11. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claims 17-19, 28-31, 35, 37, 39, and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Imuta *et al.* (U.S. 6,004,897).

Imuta *et al.* discloses the transition metal complex,  $\text{Me}_2\text{Si}(2,7\text{-Me}_2\text{-4,5-(2\text{-Me-benzo})-1\text{-indenyl})(2,7\text{-di-}t\text{-BuFlu})\text{ZrCl}_2$  (claim 7). This compound contains the requisite substituents  $\text{R}^1$  and  $\text{R}^3$  indicated in formula (I) of the instant claims. Complexes are prepared from deprotonation of free ligand with *n*-butyllithium (col. 20, line 21) and subsequent reaction of the resulting dianion with metal salt. Catalysts prepared from contact of compounds with a co-catalyst (col. 23-27) are used for polymerization of olefins such as ethylene, propylene, and butene (col. 28, line 37).

13. Claims 17-23 and 28-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rohrmann *et al.* (U.S. 5,830,821).

Rohrmann *et al.* discloses bridged, *bis*(benzo[*e*]indenyl) transition metal complexes having a structure represented by formula (I) wherein  $\text{R}^3$  is a  $\text{C}_1\text{-C}_4$  alkyl group, and ring substituents  $\text{R}^5\text{-R}^8$  are hydrogen or a  $\text{C}_1\text{-C}_4$  alkyl group (col. 4, lines 6-57). Complexes are prepared from deprotonation of free ligand with *n*-butyllithium (reaction scheme, col. 7 and 8) and subsequent reaction of the resulting dianion with metal salt. Catalysts prepared from contact of compounds with a co-catalyst (col. 10-11) are used for polymerization of olefins such as ethylene, propylene, and butene (col. 12, line 18). While the working examples do not show metallocenes in which  $\text{R}^6$  is a  $\text{C}_1\text{-C}_4$  alkyl group, it would have been obvious to one having ordinary skill in the art to make such a compound and use it in a catalyst for polymerization of olefins because this is an obvious, discrete species of the genus of compound disclosed in

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Rohrmann *et al.*, and one having ordinary skill in the art would have expected all species within the genus to produce a useful catalyst.

14. The following is a statement of reasons for the indication of allowable subject matter: Upon revision of claim to overcome objections to matters of form (paragraphs 2 and 3, *supra*), the subject matter of claims 24-27 would be allowable over the closest reference, Nifant'ev *et al.* (WO 01/47939; equivalent U.S. 7,112,638), which discloses the compound  $\text{Me}_2\text{Si}(2\text{-Me-benzo}[e]\text{indenyl})(2,5\text{-Me}_2\text{-cyclopentadithiophene})\text{ZrCl}_2$ . The reference does not teach or fairly disclose compounds of formula (IV) in which  $\text{R}^3$  is a  $\text{C}_1\text{-C}_{40}$  hydrocarbon group, and, in absence of any suggestion or motivation to do so in the teaching of the prior art, one having ordinary skill in the art would not have found it obvious to modify structurally the compound  $\text{Me}_2\text{Si}(2\text{-Me-benzo}[e]\text{indenyl})(2,5\text{-Me}_2\text{-cyclopentadithiophene})\text{ZrCl}_2$  in order to make a compound of instant claim 24. For purposes of completing PTOL-326, the status of claims 25-27 is indicated as "objected to" since they depend from an objected claim.

#### ***Information Disclosure Statement***

15. The information disclosure statement (IDS) submitted on October 13, 2006 has been considered by the examiner. Correction to citation AB was made.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu S. Jagannathan, can be reached at (571)272-1119. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<http://pair-direct.uspto.gov>>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

/Rip A. Lee/

Primary Examiner, Art Unit 1796

March 6, 2008